

ANALYSIS  
OF THE FAUNAL REMAINS  
FROM THE  
BENJAMIN BANNEKER SITE  
(18BA282)

by

David T. Clark, Ph.D.  
Zooarcheology Research Facility  
Department of Anthropology  
The Catholic University of America

The faunal assemblage from the Benjamin Banneker Site (18BA282) consisted of 736 specimens of which 648 were bones and 88 were shell (Table 1). This material was analyzed by the three major provenience units from the excavations: the Plow Zone, Feature 10, and Feature 22. Feature 10 was described as a storage pit and Feature 22 was refuse from the house foundation area.

The distribution of the faunal remains from each assemblage is recorded in Table 1. The report of the analysis is presented, first, with general comments, followed by a detailed discussion of each species. Finally, an overview discussion and conclusion is presented at the end of the report.

Each discussion section refers to data tables found at the end of the report. References are also made to figures and illustrations, where applicable.

### Methods

The assemblage had been previously washed and placed in clear, plastic, zip-lock bags with the appropriate provenience data.

The material was initially sorted into identifiable and unidentifiable fragments. The identifiable fragments were then grouped by species and element, where possible. Simultaneously, each specimen was studied, in detail, to identify pertinent data such as saw or cut marks, evidence of scavenging, age and sex data, physical condition, and meat portions. In turn, the identification and provenience data were recorded on small labels and stapled in the corner of each plastic bag. The clear bags allow the artifacts and analytical data to be viewed without opening the bag. After each assemblage was analyzed in this way, the data from each bag label was recorded on standard data sheets and then tabulated. Consequently, a final report was prepared and generally included the major text, data tables, figures and illustrations and photographs, where applicable.

Identification of the faunal materials was aided by the use of a skeleton comparative collection of modern animals housed in the archeology laboratory, Department of Anthropology, Catholic University.

Also, a collection of commercially sawed bone sections, etc., from modern "supermarket meats" as well as an extensive assemblage of bone elements from modern farm butchering (Clark 1985) was used to classify and describe symmetrically cut and sawed bone elements from the assemblages. In many cases, concentrations of symmetrically sawed bone elements of large domestic species were more common after the 1850s in historic faunal assemblages, I have studied, from the Middle Atlantic region. This is certainly linked to the development of more efficient commercial butchering techniques.

Maturation data used for computing "age at death", was recorded where possible. However, since the assemblages were

highly fragmented and usable joint ends and teeth were often broken and deteriorated, maturation data was scarce. Also, for the preceding reasons, measurements on the bones were impossible in most cases and thus, sex and age data were minimal.

### Terminology

A number of terms used in the text refer to skeletal elements and technology and are explained in this section. Most of these are references to species discussions and the data tables.

Although scientific names are used in the text and on charts, the common names for all animals are used in the discussions sections. Consequently, the reader becomes familiar with the taxonomic names as well as the common names.

The tables include the genus or class group names for animals such as Bos = cow or Aves = birds. They are listed horizontally, the rest of the faunal data is listed vertically, such as skeletal elements, number of specimens (elements, fragments), maturation data, etc. The tables include a listing for provenience (Prov.) and modifications (Mod = Cut and Sawed).

Unidentifiable bones are grouped in categories. They include large mammals (Lg. mam.) referring to pig and cow-sized animals; medium mammals (Med. mam.) = fox-sized animals; and small-sized mammals (Sm. mam.) = mouse to squirrel-sized animals.

Cut and sawed bones are common in the assemblage, especially sawed elements. Cut or axed vertebrae are often identified as "split". That is, during the initial butchering of the animal, a common technique is to split the vertebrae column (backbone) down the middle from top to bottom. This process separates the carcass in two equal halves. The result is that the vertebrae are, also, split in two and are commonly found in the refuse faunal assemblage.

Sawed bones are a common occurrence in the assemblage. Frequently, sawed specimens exhibit a high degree of symmetry as far as sawing technology is concerned. In many assemblages, sawed elements are very common and reference is often made to symmetrically sawed bone which refers to systematic butchering technology on a professional or commercial level. A good example of this level of technology is the abundance of symmetrically sawed sections representing "specialty" meat portions. Sawed bone sections consist of thick or thin, cross-cut sections, usually from the shafts of leg bones (femur, tibia, humerus), ribs, and innominates (pelvis). This type of sawing represents systematic butchering of entire animals such as cows, sheep and especially pigs. For assemblages I have analyzed from sites in the Middle Atlantic region, this type of technology is more common after the mid-1800s.

### Limitations of the Research

The small size of the assemblage limited the amount of information from the analysis. Other factors limiting the analysis were the fragmented condition of the assemblage which decreases the identification of species, and poorly preserved or complete absence of element joints which provide age and sex data.

Other problems focus on the interpretation of the faunal remains specifically. With smaller samples, there is always a limited variety of skeletal elements represented in the assemblages. Furthermore, historic faunal assemblages are frequently but not always represented by food refuse in the form of individual meat portions. Rarely, especially in urban contexts, does an assemblage contain the complete remains of butchered animals; this is more characteristic of assemblages from more rural contexts like farmsteads, plantations, etc. Thus, an important consideration is the number, distribution, and type of meat portions represented in an assemblage, especially since most of the faunal remains represent food refuse.

Turnt and incinerated bone specimens were exceedingly rare in all the assemblages. This suggests that meats were often prepared by methods other than exposure to direct heat, or the bone was removed and discarded prior to cooking. Such methods included pickling (salting), smoking, and cooking in liquid (boiling, stewing, etc.).

### Plow Zone

The faunal assemblage from the plow zone consisted of 372 bone and 35 shell fragments (Tables 1 and 2). Of the total, 165 (44%) fragments were from unidentifiable large mammals. The most common species were cow, pig and chicken (Table 1). An incomplete raccoon skeleton was identified but was probably intrusive in the deposit.

The remains were in good condition considering that they were collected from the plow zone at the site. The bone fragments exhibited little surface damage and consisted of many large identifiable pieces. However, the distribution of skeletal elements was limited, including mostly fragments from large leg bones as well as teeth. This pattern is not unusual, however, for scattered, disturbed plow zone deposits. Overall, the evidence suggested that the assemblage was representative of materials that were well protected from prolonged weathering. Thus, future excavations at the site should produce an excellent faunal collection if appropriate recovery techniques such as smaller mesh screening (1/8 inch), wet screening and liquid flotation sampling and processing are employed.

#### Bos taurus (Cow)

Cow bones (12) were predominantly isolated, small fragments of teeth (Table 2). These probably constitute refuse from initial butchering, as they are not associated with meaty portions of the body. Other elements were two symmetrically sawed rib shafts from rib roasts and an innominate (pelvis) from a sirloin or round roast (Figure 1). Also, two axed femur (upper hind leg) fragments were identified and represented hind shank cuts (Figure 1).

Based on the maturation data from bone fusion patterns, two cows were at least 3.5 years old at death.

#### Sus scrofa (Pig)

There were 20 fragments identified as pig (Table 2) and most of these were of isolated teeth (14). As with cow, the teeth undoubtedly represent refuse from initial slaughtering since they are not associated with meaty areas of the body. Based on recent farm butchering research, pig skulls and mandibles (jaws) with teeth, are discarded during the early phases of the initial butchering or slaughtering (Clark 1985). Other meat portions identified were ribs and a picnic shoulder as well as several cuts from both "butt" half (2) and "shank" half (2) hams (Figure 2). One of the femur (upper hind leg) fragments was symmetrically sawed, usually indicative of butchering technology dating later than the 1850s.

The maturation data from bone fusion and tooth wear patterns indicated that two pigs were less than one year old at death.

### Ovis aries (Sheep)

There were 8 sheep bone fragments identified and the common elements were from fore and hind leg bones (Table 2). Unlike the cow and pig refuse, tooth fragments were completely missing in the sheep assemblage. This demonstrates the diversity of element distributions between large domestic mammal assemblages and indicates a general pattern identified in many historic faunal assemblages I have studied. Apparently, the skulls and mandible (jaw) with teeth, are discarded after initial butchering so that teeth and cranial fragments are rarely recovered during excavations.

The rest of the remains were from fore and hind leg elements. Most of these were symmetrically sawed bone sections from the shaft portion of long bones (legs) and they represented "specialty" portions, including shoulder chops as well as a variety of hind "leg of lamb" chops (Figure 3). Sawed sheep remains were more common than those of cow or pig and represented systematic butchering technology more common after the mid-1800s.

Maturation data was unavailable for this assemblage since most specimens were sawed bone sections or fragments.

### Procyon lotor (Raccoon)

An incomplete skeleton of a raccoon was identified (Table 2). The material included mostly post-cranial remains and was in excellent condition in comparison to all other refuse from the site. This suggested that, perhaps, the raccoon remains were deposited recently and were not part of the original faunal assemblage.

The remains represented an adult, male raccoon based on bone fusion patterns and the identification of a baculum (penis bone) in the assemblage.

Raccoons are very common in the eastern U.S. and were also used as a food resource.

### Rattus sp. (Rat)

Only one rat bone was identified in the assemblage; it was a femur (upper hind leg) fragment (Table 2).

Rats are common scavengers and are frequently identified in historic refuse assemblages. Furthermore, the fact that rat bones were rare and that there were few rodent gnawed elements in the assemblage suggested that, originally, the refuse was not exposed to prolonged rodent scavenging.

### Gallus gallus domesticus (Chicken)

Chicken remains (134) were abundant in the assemblage and included a variety of skeletal elements from the body, representative of whole chicken carcasses (Table 2). The most common meat portions were backs, breasts, wings, thighs and legs.

Crassostrea virginica (American Oyster)

Oyster shells were very common in the assemblage consisting, mostly, of complete valves (shells). There were slightly more right valves than left (Table 2). Generally, oysters live in colonies and are adapted to a variety of habitats from the ocean to estuaries. They are a common food resource and the shells were pulverized and used for mortar and fertilizer.

Mercenaria mercenaria (Hard shell clams)

Hard clam remains (10) were much less common than those of oysters and the clam shells were more fragmented. Mercenaria has a more restricted distribution than that of the oyster and is adapted to tidal flats, etc., near the surface and is found in water of high salinity (about 2/3 that of ocean water). Hard clams are also a common food resource.

## FEATURE 10

Feature 10 was described as a storage pit associated with the Benjamin Banneker site (18 Ba 282). The faunal assemblage from Feature 10 consisted of 111 bone and 52 shell fragments (Table 1). The material was excavated in 7 levels but since the assemblages, per level, were small and there were only minor difference between each one, they were analyzed as a single unit (Table 2).

Of the total bone assemblage (111), large mamal remains were most abundant and 41 (37%) of these wre unidentifiable fragments (Table 2). Overall, cow, pig, and oyster were the most common species identified.

The physcal condition of the bone and shell material was very poor which limited the data potential of the entire assemblage. Most of the bone specimens were cracked and split, longitudinally, with outer portions of the bone peeling or flaking away. In many cases, the material was very friable and broken in small pieces. The small size and surface deterioration of the fragments seriously limited the amount of information collected from the faunal assemblage.

Dense bone elements, such as phalanges (toe bones) and teeth, were well preserved. This is not surprising, since the dense, hard, enamel covering of the teeth tends to be more resistant to prolonged chemical or physical weathering in comparism to other skeletal elements. Interestingly, teeth were especially abundant, representing 20% (22) of the total bone assemblage (111).

The shell remains (52) were, also, in poor condition and nearly all the shells exhibited a chalky texture and were breaking in very small fragments which is indicative of prolonged chemical weathering.

Considering the condition of the entire assemblage, the evidence indicates that the faunal assemblage from Featrue 10 was exposed to prolonged chemical and/or physical weathering. Thus, analytical information was minimal. The material is discussed, below, by species.

Bos taurus (Cow)

Cow remains consisted of 58 specimens and most were cranial fragments (39) from one skull as well as maxillary (upper jaw) teeth (13), probably, from the same skull (Table 2). This material, also, included many lower leg extremity elements (toes). Both these elements (teeth and toes) tend to be more resistant to weathering. The cranial fragments teeth, and leg extremities, probably represent refuse from initial butcherings since they are associated with little meat and are rarely eaten.



Two elements exhibited ax/cut marks (Table 2). A cut ulna fragment (lower foreleg) and cut rib shaft were probably from foreshank and rib roast or "short-plate" cuts, respectively (Figure 1).

The limited maturation data from the ulna fragment indicated one cow was , at least, 3-3 1/2 years old at death.

#### Sus scrofa (Pig)

Pig remains included only teeth (Table 2). Both mandibular (lower jaw) and maxillary (upper jaw) teeth were identified and probably constitutes refuse from initial butcherings, although the mandibular tooth remains might be refuse from "jowl" meats (Figure 2).

The molar teeth were scrutinized for wear and the resulting maturation data suggest that one individual was less than 7 months old and another was over 17 months old at death.

#### Ovis aries (Sheep)

A single radius fragment (lower foreleg) was identified as sheep (Table 2). This specimen, probably, was refuse from a foreshank meat portion (Feature 3).

#### Indeterminable Large Mammal

Unidentifiable large mammal remains were common and most were long bone fragments (Table 2).

#### Aves (Birds) and Bufo (Toad)

Other remains included one bird bone fragment and one toad forelimb fragments.

#### Centrarchidae (Sunfish)

The only fish remains were 2 unidentifiable fish scales.

#### Crassostrea virginica (American oyster)

Oyster shell remains (52) were common in the assemblage (Table 2). This material was in poor condition but most specimens represented near complete shells (valves). Left valves were more common than right (Table 2). It is difficult to determine the origin of the oysters but they are a common food resource and the shells were often crushed and used as a fertilizer.

## Feature 22

Feature 22 was described as house refuse from the Benjamin Banneker Site (18BA282). The faunal remains from this feature consisted of 165 bone and fish scale fragments and 1 shell (Table 1). Of the total bone assemblage, 122 (74%) fragments were from unidentified large mammals. The most common, identified species were cow and pig, plus a variety of small wild animals.

The large mammal remains were in good condition but were very fragmented. In contrast, there were a number of well preserved small mammal elements which suggests that future research at the site might yield an excellent collection of faunal remains if appropriate recovery techniques are used (flotation, 1/8 inch mesh screens, wet screening).

### Bos taurus (Cow)

Cow bones (10) consisted of rib, limb bone and isolated tooth fragments (Table 4). Meat portions included shortribs, chuck, foreshank and hindshank cuts (Figure 1). These were all lesser quality meats.

The maturation data from bone fusion patterns, indicated that one cow was at least 2.5 years old at death.

### Sus scrofa (Pig)

Most of the pig remains (18) were isolated teeth (Table 4). This material was probably refuse from initial butcherings. Other bone fragments included a humerus (upper foreleg) shaft from a picnic shoulder cut and a metacarpal (foot bone), possibly from a forefoot (pigs feet) portion (Figure 2). These portions, like those of cow, represented lesser quality meats.

The limited maturation data from bone fusion patterns indicated that one pig was less than 2 years old at death.

### Ovis aries (Sheep)

Sheep remains (5) were uncommon and included vertebrae and forelimb fragments (Table 4). One sawed upper lumbar vertebrae (backbone) was from a "rack of lamb" portion (Figure 3). The forelimb remains were from shoulder and foreshank cuts. All these portions, like those of cow and pig, represented lesser quality meats.

### Unidentifiable Large Mammals

This material represented 74% of the refuse and was too fragmented for identification (Table 3). The bulk of the remains were long bone (leg) fragments, probably from large domestic mammals. Morphologically, the fragments did not resemble elements from larger wild animals such as white-tailed deer.

Peromyscus sp. (Mouse)

A single mouse incisor (front tooth) was identified (Table 4), it probably represents a recent intrusion in the deposit.

Terrapene carolina (Eastern Box Turtle)

Box turtle remains included 2 carapace (upper shell) fragments. Box turtles are very common, terrestrial animals and live in moist areas of meadow to woodland fringe zones. Box turtles were a common food resource.

Pisces (Fish)

Several varieties of fish were identified (Table 4) and all were freshwater species. Most fish remains were poorly preserved scales. The species included Lepisosteus sp. (Gar), Perca flavescens (Yellow Perch) and an unidentifiable sunfish vertebrae (backbone). All these species are used as food resources.

Crassostrea virginica (American Oyster)

Only a left valve (shell) was identified as oyster and represented the only shellfish remains identified in the assemblage. Oysters are a popular food resource.

### Discussion and Conclusions

The assemblage from the Benjamin Banneker site (18BA282) consisted of 648 bones and scales, and 88 shell fragments (Table 1). This material included many fragments which limited the recovery of valuable analytical data. Three assemblages were analyzed: the "Plow Zone"; Feature 10 -- a storage pit; and Feature 22 -- house refuse (Table 1-4).

All the material was in good physical condition and included many small, fragile elements from fish, amphibians and mammals. Overall, the condition of the assemblage, plus the recovery of delicate elements, suggest the possibility that future research at this site will produce a well preserved faunal assemblage.

### Species Distribution

Due to the fragmented condition of the assemblage, 328 (51%) fragments represented unidentifiable large mammal remains. The most common identified species were cow and pig, and, to a lesser extent, sheep. The only other domestic species identified was chicken and only from the "Plow Zone" assemblage (Table 1-2).

Wild animal remains were less common than those of domestic animals. Elements from large wild species such as white-tailed deer were not identified. A number of specimens from small, wild species, especially fish and shellfish, were identified. These included yellow perch and oysters.

Some animal remains were probably intrusive in the deposit, especially those of raccoon, mouse, toad, and rat.

The wild species from the assemblage were adapted to a variety of habitats. Fish were all freshwater species suggesting, perhaps, a stream or river was near the site. Box turtles are often found in moist regions of meadows, fields and woodland fringe. Oysters, on the other hand, are adapted to saline habitats -- estuaries to sub-tidal ocean zones.

### Distribution of Skeletal Elements

Keep in mind that the small size of the assemblage often affects the element distributions to a certain extent. There was considerable diversity between species. In comparison, the element distribution of large domestic mammals was varied. Both cow and pig remains included cranial, especially teeth, and post-cranial remains, especially leg bone fragments. In contrast, sheep remains did not include teeth or skull elements but mostly fore and hind limb fragments. Most of the post-cranial (below the neck) remains were from the meatiest portions of the body, whereas teeth probably represent discarded refuse from initial butcherings.

The meat portions of each species varied considerably. Cow portions were mostly large hind roasts from the pelvis and leg areas. Pig meats were nearly all picnic shoulders and hams.

Sheep portions were almost exclusively from the fore and hind legs. Of interest is the fact that nearly all the meat portions of cow, pig and sheep from Feature 22 were of noticeably lesser quality than those of the other assemblages. However, to a certain extent, this observation might be related to the small sample size of the assemblage.

Symmetrically sawed cow, pig and sheep elements were only recorded in the "Plow Zone" assemblage. However, sheep remains included a much wider range of specialty meats than those of cow or pig, consisting of shoulder and hind leg "chops". As mentioned elsewhere, concentrations of symmetrically sawed elements are characteristic of periods later than the mid 1800s for assemblages I have studied.

Thus, it appears that the "Plow Zone" assemblage is dated much later than that of Feature 10 or 22.

The other domestic animal identified was chicken; it was found only in the "Plow Zone" assemblage. A wide range of cranial and post-cranial elements were recorded and indicated that whole carcasses were represented in the assemblage.

#### Maturation Data

The maturation (age) data were limited due to the small size of the assemblage, the fragmented condition of the bone, and the fact that the joint ends often used to determine age and sex of many elements were broken or deteriorated. The limited evidence suggested that cows were older than 2 years of age at death and pigs were less than 1 year old. Sheep remains were too fragmented or sawed for determinations.

References Cited

- Clark, David T.  
1985 Modern Farm Butchering Technology. An  
unpublished report. On file, Zooarcheology  
Research Facility, Department of Anthropology.  
The Catholic University of America.

## Tables

The following is an explanation of the symbols and abbreviations used in the data Tables. The specimens listed on the Tables are all fragments unless stated otherwise.

The Tables are organized by element and species. The complete scientific name, for each species are used in the text, only. General animal listings are as follows:

- Lg. mam. = unidentifiable large mammal (cow or deer size),
- Med. mam = " " medium " (fox or raccoon size).
- Sm. mam = " " small " (mouse or squirrel size).
- Aves = birds
- Sm. Aves = small bird (robin or sparrow size).
- Lg. Aves = large bird (turkey size).

Several symbols refer to the teeth. They include: I = incisor; C = canine; PM = premolar; M = molar. The distinction between mandibular or maxillary teeth is expressed with subscript numbers - for example:

- M = first mandibular molar
- M = first maxillary molar
- I = first mandibular incisors
- I = first maxillary incisors

References to maturation data are expressed as : (-) = immature and (+) = mature. Also, the symbol "ep" refers to epiphysis - the end of the bone referring to bone fusion, and "dia" refers to diaphysis - the shaft of a bone. Symbols for sawed elements are =[1] and cut or axed elements are =(1). Terms referring to the orientation of limb elements include : px = proximal - the end nearest the trunk or head, and dst = distal - the end farthest from the trunk or head. The designation of "L" = a left element (L-ulna) and "R" = a right element (R-ulna).

Every assemblage has a number of indeterminable bone fragments. This material is often listed as follows:

- L.B.F. = long bone fragment(s) (leg bones).
- R.F. = rib fragment(s).
- V.T. = vertebrae fragment(s).

Many elements represent symmetrically sawed cross-section bone specimens which are listed as : sec. = sections.

A number of skeletal element terms for Aves, Reptiles, Amphibians and Pisces are different than those of mammals. The common elements are as follows:

Aves (Birds)

- cora. (coracoid) = shoulder element.
- furc. (furculum) = breast or "wish" bone.
- pygo. (pygostyle) = tail bone.
- tarmet. (tarsometatarsal) = lower leg.
- tibio (tibiotarsus) = middle leg.

Turtle

- carap. (carapace) = upper shell.
- plas. (plastron) = lower shell.

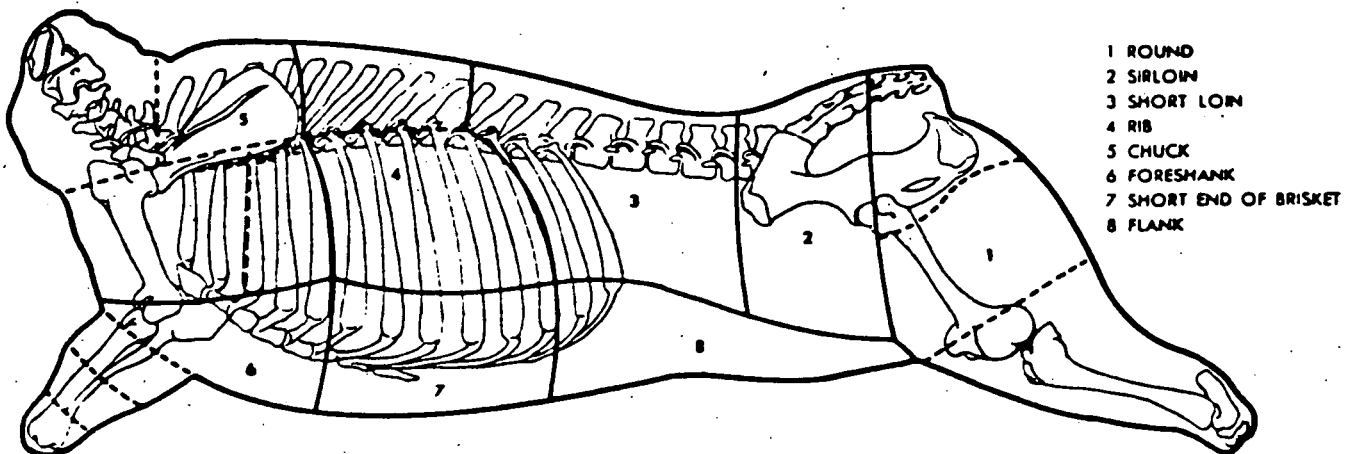
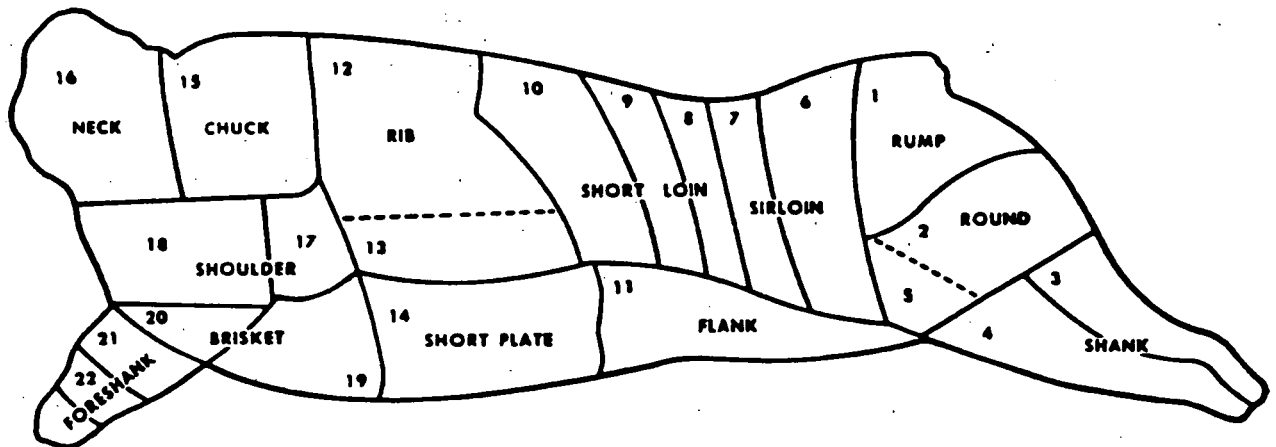
Pisces

- pect. sp. (pectoral spine).



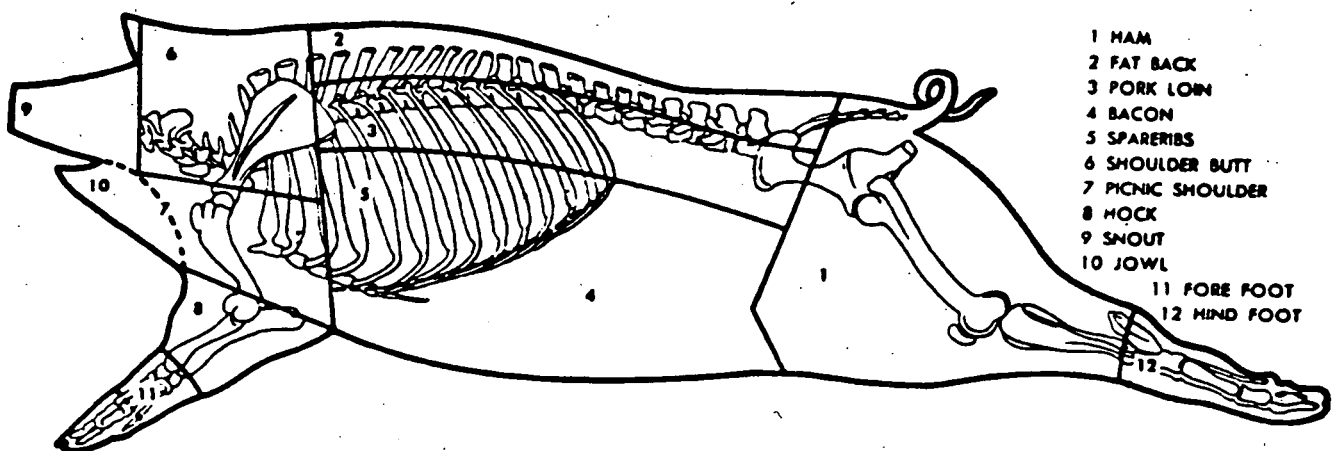
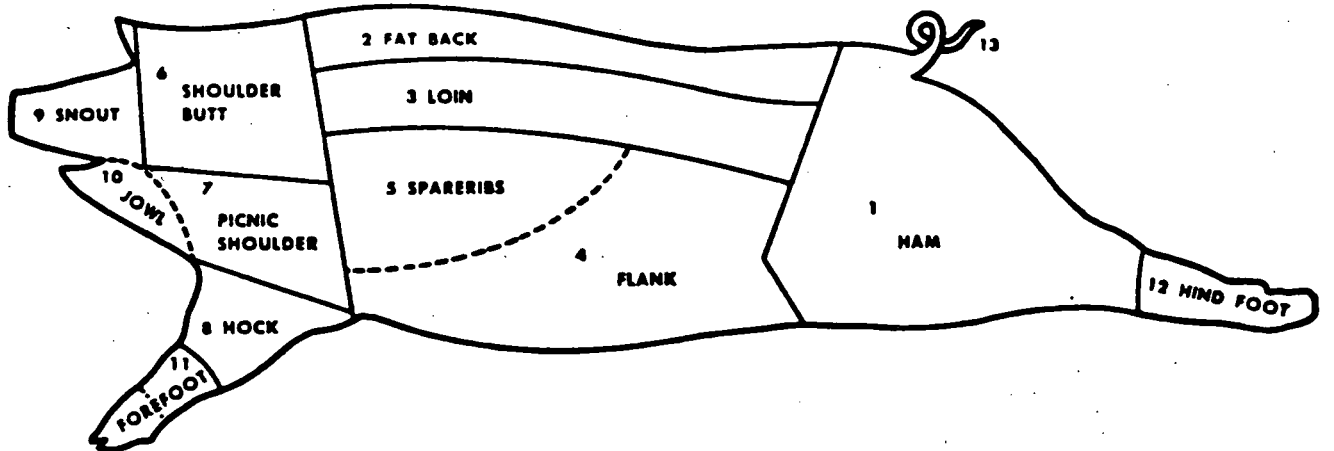
Bos taurus (Cow) Meat Portions.

Figure 1.



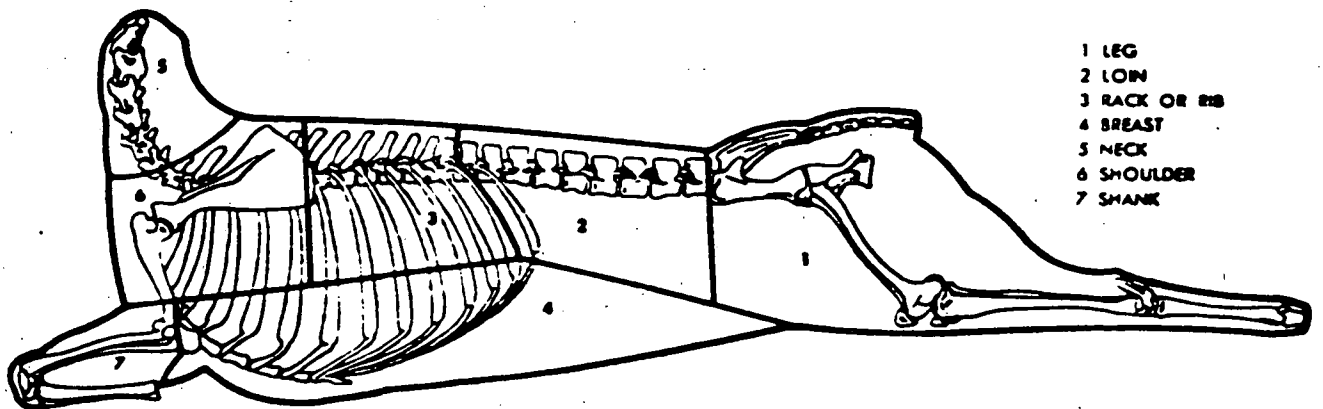
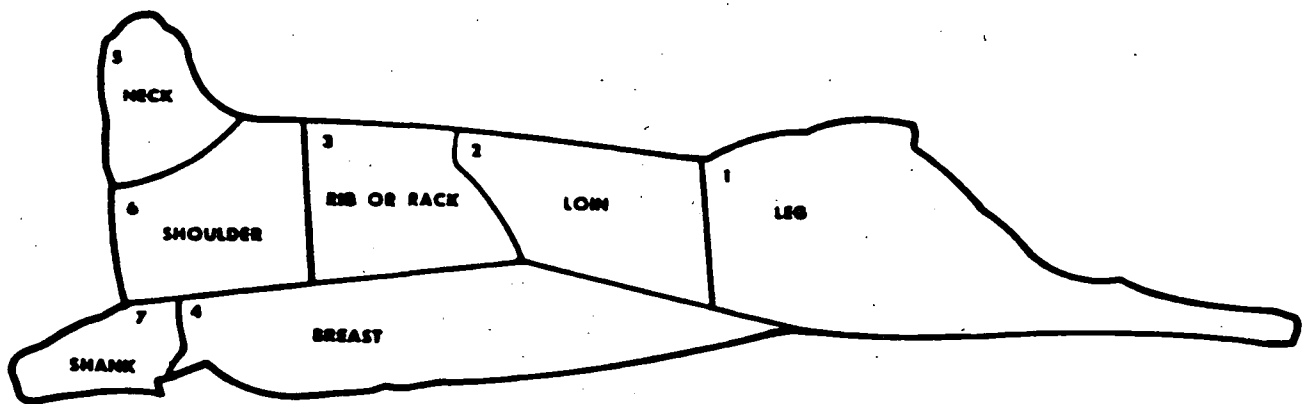
Sus scrofa (Pig) Meat Portions.

Figure 2.



Ovis aries (Sheep) Meat Portions.

Figure 3.



# TABLES

Table 1. Species Distributions: Benjamin Banneker Site (18 Ba282).

		Flow Zone		F-10		F-22			
Bos taurus	Cow	12		58		10			
Sus scrofa	Pig	20		7		18			
Ovis aries	Sheep	8		1		5			
Large mammal		165		41		122			
Procyon lotor	Raccoon	32		-		-			
Peromyscus sp.	Mouse	-		-		1			
Rattus sp.	Rat	1		-		-			
Gallus gallus	Chicken	134		-		-			
Aves sp.	Bird	-		1		-			
Terrapene carolina	Box Turtle	-		-		2			
Bufo sp.	Toad	-		1		-			
Perca flavescens	Yellow Perch	-		1		3			
Lepisosteus sp.	Gar	-		-		2			
Centrarchidae	Sunfish	-		2		1			
Crassostrea virginica	Oyster	25		52		1			
Mercenaria mercenaria	Hard Clam	10		-		-			
TOTAL		407		163		166			
SITE TOTAL	736								

RECEIVED

SEP 1 1987

MARYLAND HISTORICAL  
TRUST